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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,488	12/03/2003	Mark Zoller	T1530-00020	3974

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EXAMINER	
LANDSMAN, ROBERT S	

ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,488	ZOLLER ET AL.	
	Examiner	Art Unit	
	Robert Landsman	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Pre. Amend 9/7/05, 12/2/03, 10/12/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *194-256* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *194-256* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Formal Matters

A. The Preliminary Amendments filed 12/2/03, 10/12/04 and 9/7/05 have been entered into the record.

B. Claims 194-256 are pending and are the subject of this Office Action.

2. Oath

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the inventor Jon Alder did not sign the Oath.

3. Specification

A. The specification is objected to since the status of applications in the first line of the specification should be updated.

B. The drawings show a Figure 3C. However, this Figure is not referenced in the Brief Description of the Figures.

C. The Brief Description of Figure 16 does not recite "Figures 16 A and B," for example, in order to correspond to the actual Figures.

D. The status of application 09/984,292 on page 15 ([0071]) should be updated.

4. Claim Objections

A. Claims 205 and 206 are objected to since they recite "nutric."

B. Claim 208 is objected to since ""NO." should have a semi-colon instead of a period - as in "NO:"

C. Claim 221 is objected to since the syntax could be improved. Applicants should consider amending the phrase "comprised in" since receptors are not actually comprised in membranes inasmuch as membranes comprise the receptors. The same reasoning is used for claims 223.

D. Claim 242 is objected to since it recites "wherein is a high throughput." First, the phrase should be reword to, for example, "wherein said method..." Furthermore, the phrase "high-throughput" should be hyphenated.

E. Claim 252 is objected to since the term "ligand-specific" should be hyphenated.

5. Claim Rejections - 35 USC § 112, first paragraph – scope of enablement

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

A. Claims 194-256 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for methods of using the heterodimer of SEQ ID NO:4, 5 and 7 (encoded by SEQ ID NO:8 and 9), does not reasonably provide enablement for methods of screening all umami taste receptors, including those which hybridize to SEQ ID NO:8 or 9, or for fragments thereof, or for those "at least 90% identical" to SEQ ID NO:5 or 7. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

In In re Wands, 8USPQ2d, 1400 (CAFC 1988) page 1404, the factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

First, the breadth of the claims is excessive with regard to claiming screening methods using all heteromeric T1R1/T1R3 taste receptors which are activated by umami taste, including those from **any and all species**. Applicants have only identified SEQ ID NO:4, 5 and 7 form dimers and are activated by umami taste. Similarly, the breadth is excessive with regard to taste receptors encoded by polynucleotides which "**hybridize**" under stringent conditions to that of SEQ ID NO:8 or 9, as well as "**fragments**"

thereof of the receptors, or for those "**at least 90% identical**" to SEQ ID NO:5 or 7. Nucleic acid molecules which "hybridize" to those polynucleotides would have one or more nucleic acid substitutions, deletions, insertions and/or additions to said polynucleotides. Similarly, proteins which are "fragments" of the claimed proteins would have one or more amino acid substitutions, deletions, insertions and/or additions to the claimed proteins.

Applicants provide no guidance or working examples of nucleic acid molecules which hybridize to SEQ ID NO:8 or 9, or of proteins which are "fragments" of these proteins. Furthermore, it is not predictable to one of ordinary skill in the art how to make a functional T1R1/T1R3 heterodimer other than that comprising the full-length SEQ ID NO:4, 5 and 7.

A similar situation arises in, for example, claim 207 which recites "**a T1R3 polypeptide.**" There is no requirement that the polypeptide be full-length, nor, as discussed above, does the specification provide any guidance as to what changes can be made to the full-length receptor while retaining its functionality. Furthermore, only the full-length T1R3 of SEQ ID NO:4 and 7 have been described.

In summary, the breadth of the claims is excessive with regard to Applicants claiming all nucleic acids which hybridize to SEQ ID NO:8 or 9, or for proteins which are at least 90% identical to SEQ ID NO:5 or 7, or fragments of these proteins. There is also a lack of guidance and working examples of these nucleic acid molecules and proteins. These factors, along with the lack of predictability to one of ordinary skill in the art as to how to make a functional T1R1/T1R3 heterodimer other than that comprising the full-length SEQ ID NO:5 and 7 leads the Examiner to hold that undue experimentation is necessary to practice the invention as claimed.

B. Claims 194-256 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for methods of screening for compounds which modulate SEQ ID NO:4, 5 and 7 (encoded by SEQ ID NO:8 and 9), does not reasonably provide enablement for methods of screening for compounds which "activate" the SEQ ID NO:5/7 dimer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

As discussed below under 35 USC 112, second paragraph, Applicants have not taught how to determine how the assays of the claims, including, for example, 229-238 and 246-251, could be used to demonstrate that a compound has "activated" the receptor. It is not understood what endpoint is being examined. Claim 194 recites that the compound can either "activate" the receptor or "modulate (enhance or inhibit) the activation. However, there is no conclusion step in either claim 194, or dependent claims

reciting specific functional or assay endpoints (e.g. 229-238 and 246-251) which will allow the artisan to determine what effect this compound has on the receptor. In other words, it is unclear, for example, as to whether increase internalization (claim 230) would be considered activating the receptor, or whether decreased internalization would be considered as receptor activation. The same question arises with, for example, claim 234. It is not clear if an increase in voltage or intracellular calcium or a decrease in these levels which is considered an activation of the receptor. Again, this issue is seen in at least claims 229-238 and 246-251.

C. Claim 253 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim recites methods where the assay detects the effects of a compound on transmitter or hormone release. However, the specification does not provide any guidance or working examples as to what transmitters or hormones are affected by T1R1/T1R3, nor is it predictable to the artisan as to which transmitters and hormones, given the entire breadth of known transmitters and hormones, are affected by the receptor complex.

6. Claim Rejections - 35 USC § 112, first paragraph – written description

A. Claims 194-256 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

These are genus claims. The specification only describes screening methods using the T1R2/T1R3 heterodimer comprising SEQ ID NO:4, 5 and 7. Heterodimers from **any other species**, or "**fragments**" of SEQ ID NO:5 or 7, as well as those "**at least 90% identical**" to SEQ ID NO:5 or 7, would have one or more amino acid substitutions, deletions, insertions and/or additions to these proteins and have not been described. Similarly, nucleic acid molecules which "**hybridize**" to those polynucleotides of SEQ ID NO:8 or 9 would have one or more nucleic acid substitutions, deletions, insertions and/or additions to said polynucleotides. Similarly, Applicants have not described which residues are critical for protein function.

A similar situation arises in, for example, claim 207 which recites "**a T1R3 polypeptide**." There is no requirement that the polypeptide be full-length, nor, as discussed above, does the specification provide any description as to what changes can be made to the full-length receptor while retaining its functionality. Furthermore, only the full-length T1R3 of SEQ ID NO:4 and 7 have been described.

The specification and claims do not indicate what distinguishing attributes are shared by the members of the genus. Thus the scope of the claims includes numerous structural variants, and the genus is highly variant because a significant number of structural differences between genus members is permitted. The specification and claims do not provide any guidance as to what changes should be made. Structural features that could distinguish compounds in the genus from others in the nucleic acid or protein class are missing from the disclosure. No common structural attributes identify the members of the genus. The general knowledge and level of skill in the art do not supplement the omitted description because specific, not general, guidance is what is needed. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, SEQ ID NO:4, 5, 7, 8 and 9, or molecules which hybridize to the polynucleotides encoding these SEQ ID NOs (which could be at least thousands of molecules) alone are insufficient to describe the genus. One of skill in the art would reasonable conclude that the disclosure fails to provide a representative number of species to describe the genus. Thus, Applicant was not in possession of the claimed genus at the time the invention was made.

7. Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A. Claims 194-256 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 194 recites "activation" and "modulates." This is confusing since to activate a receptor means to cause a response whereas the term "modulates" refers to enhancing or inhibiting a response. These limitations should be placed into independent claims. Whereas it is clear how to determine if a compound modulates a response, it is not clear from the claims how to determine if the compound activates a receptor. There is not endpoint or conclusion step in claim 194, nor, for example, in claims 229-238 and 246-251 which would allow the artisan to determine what end result would identify the compound as eliciting a response. See paragraph B under the 35 USC 112, first paragraph, enablement rejection above.

B. Claims 198-206 and 208-218 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "contained in" is unclear. It is not understood if the claim refers to the full-length of the claimed SEQ ID NO, or a fragment thereof, which encodes the functional receptor, for which the specification has not described.

C. Claims 216 is confusing since the rat T1R3 is SEQ ID NO:4, not SEQ ID NO:9.

D. Claim 206 and 218 is vague and indefinite since the claim recites "stringent conditions." It is not known what these conditions are. Nucleic acid molecules which hybridize under conditions of "low" stringency would not necessarily hybridize under conditions of "high" stringency. Furthermore, not all conditions of "high" or "low" stringency, for example, are the same. Therefore, it is required that Applicants amend the claims to recite the exact hybridization conditions without using indefinite phrases such as "*for example*" **without adding new matter**.

E. Claims 207, 208 and 218 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "in association with" is unclear. It is not understood in what manner T1R1 is "in association with" T1R3.

8. Provisional Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

A. Claims 194-256 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 194-229 of copending Application No. 10/725,080; claims 194-252 of copending Application No. 10/725,418 and claims 194-234 of copending Application No. 10/725,489. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application recites a method of screening compounds using the dimer. The '418 application also recites a method of screening compounds using the dimer The '489 application recites a recombinant cell comprising a T1R1/T1R3 dimer. The '080 applications recites the dimer. Methods of making and using the dimer are obvious over the dimer.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Prior Art

A. No art rejection is being made since, even though the claimed sequences may have been known at the time of filing of the instant application (e.g. US20030036089), no prior art reference teaches the claimed T1R heterodimers, or that they modulate sweet taste. It is noted that the present invention is only being given priority to 09/897,427 (July 3, 2001).

10. Conclusion

A. No claim is allowable.

Advisory information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Landsman whose telephone number is (571) 272-0888. The examiner can normally be reached on M-Th 10 AM – 7 PM (eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert Landsman
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Art Unit 1647